

Sioux Steel Company v.
KC Engineering, P.C.

Chad Kramer, PE
September 29, 2016

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UNITED STATES DISTRICT COURT
DISTRICT OF SOUTH DAKOTA
SOUTHERN DIVISION

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SIOUX STEEL COMPANY,
a South Dakota corporation,

Plaintiff,

vs. Civ. 15-4136

KC ENGINEERING, P.C., an Iowa
corporation,

Defendant.

=====

Deposition of: CHAD KRAMER, PE
Date: September 29, 2016
Time: 9:03 a.m.

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APPEARANCES

Mr. G. Verne Goodsell
Goodsell Quinn, LLP
Rapid City, South Dakota

and

Ms. Amy Ellis
Sioux Steel Company General Counsel
Sioux Falls, South Dakota

Attorneys for the Plaintiff

Mr. Michael F. Tobin
Boyce Law Firm, LLP
Sioux Falls, South Dakota

Attorney for the Defendant

ALSO PRESENT: Jason O'Mara, KC Engineering

REPORTED BY: Audrey M. Barbush, RPR

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1 STIPULATION

2 It is hereby stipulated and agreed, by and between the

3 above-named parties through their attorneys of record, whose

4 appearances have been hereinabove noted, that the deposition

5 of CHAD KRAMER, PE, may be taken at this time and place;

6 that is, at the offices of Boyce Law Firm, LLP, 300 South

7 Main Avenue, Sioux Falls, South Dakota, on the 29th day of

8 September, 2016, commencing at the hour of 9:03 a.m.; said

9 deposition taken before Audrey M. Barbush, a Registered

10 Professional Reporter and Notary Public within and for the

11 State of South Dakota; said deposition taken for the purpose

12 of discovery or for use at trial or for each of said

13 purposes, and said deposition is taken in accordance with

14 the applicable Rules of Civil Procedure as if taken pursuant

15 to written notice. Objections, except as to the form of the

16 question, are reserved until the time of trial. Insofar as

17 counsel are concerned, the reading and signing of the

18 transcript by the witness is not waived.

19 -oOo-

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23 CHAD KRAMER, PE,

24 called as a witness, having been first duly sworn,

25 testified as follows:

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5 <u>Exhibit 5</u> - Design file, PLF 1363-1385	15
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15 (The original transcript was provided to Mr. Tobin.)	
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1 EXAMINATION

2 BY MR. TOBIN:

3 Q Good morning, Chad.

4 A Good morning.

5 Q We just met. My name is Mike Tobin, and you understand

6 that I represent KC Engineering in this lawsuit brought

7 by Sioux Steel?

8 A Yes.

9 Q I don't believe we've ever met before.

10 A We have not.

11 Q I'm going to guess that you went over some of this with

12 the attorneys, but just as a reminder:

13 If I ask a question that you don't understand,

14 will you please stop me and let me know?

15 A Yes.

16 Q Because I want to make sure that any answer you give,

17 you understand the question when you give that answer.

18 Okay?

19 A Understood.

20 Q And then let's both try not to talk over each other,

21 and I need to do that as well. The court reporter

22 appreciates if she only takes down one thing at a time.

23 So if I start to talk before you're done giving an

24 answer, you can put your hand up or otherwise let me

25 know, and I'll let you finish your answer. Okay?

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<p style="text-align: right;">Page 21</p> <p>1 chosen for.</p> <p>2 Q Is there a particular computer program outside of Excel</p> <p>3 that helps you do this, or is your Excel set up to</p> <p>4 essentially produce this mathematical calculation on</p> <p>5 page 1376?</p> <p>6 A I'm not sure I understand your question.</p> <p>7 Q Well, how does all the information, all the math on</p> <p>8 page 1376 -- I mean how does that get there? I'm</p> <p>9 assuming you have to input some information.</p> <p>10 A Yes.</p> <p>11 Q And then is the Excel just doing the math for you?</p> <p>12 A Yes.</p> <p>13 Q And is the information that you're inputting, is that</p> <p>14 the stuff below the table -- or above the table and</p> <p>15 below the "Hopper Panel Vertical Splices" heading?</p> <p>16 A Yes.</p> <p>17 Q At the far right there's the utility ratio?</p> <p>18 A Utilization ratio.</p> <p>19 Q Utilization ratio. Thank you.</p> <p>20 What does that tell someone like yourself? What</p> <p>21 do those ratios mean?</p> <p>22 A It tells you how much the -- how much of the allowable</p> <p>23 capacity is utilized.</p> <p>24 Q Okay. And it's my understanding that we want to be</p> <p>25 below 1; is that correct?</p>	<p style="text-align: right;">Page 23</p> <p>1 problem?</p> <p>2 A Yes.</p> <p>3 Q So you would have seen that we have a problem at the</p> <p>4 28-foot diameter --</p> <p>5 A Yes.</p> <p>6 Q -- and also at the 15-foot diameter?</p> <p>7 A Yes.</p> <p>8 Q In fact, at the 28-foot diameter we have a very big</p> <p>9 problem, correct?</p> <p>10 A The ratio is over 1, yes.</p> <p>11 Q I mean it's -- I don't want to parse words with you,</p> <p>12 but we are -- we're almost up to 4.</p> <p>13 A Yes.</p> <p>14 Q What did you then do, if anything, after you saw those</p> <p>15 numbers to change your design in any way?</p> <p>16 A We didn't know that these numbers were at those levels</p> <p>17 until post failure, and at that time we made design</p> <p>18 changes.</p> <p>19 Q So -- okay. You never saw or appreciated these numbers</p> <p>20 pre-failure?</p> <p>21 A I did not.</p> <p>22 Q Was that a mistake on your part? I mean you should</p> <p>23 have realized these numbers pre-failure?</p> <p>24 Let me start over.</p> <p>25 The bin that was manufactured and shipped down to</p>
<p style="text-align: right;">Page 22</p> <p>1 A Yes.</p> <p>2 Q So, for example, at the 28-foot diameter it's my</p> <p>3 understanding that those vertical seams would be</p> <p>4 overstressed by 389 percent.</p> <p>5 Is that how you would read that?</p> <p>6 A Yes.</p> <p>7 Q And then at 15 feet those vertical seams are</p> <p>8 overstressed by 152 percent?</p> <p>9 A They would be overstressed by 52 percent.</p> <p>10 Q And at 4 foot, we're below 1, so that would be a number</p> <p>11 that -- that we would like to see?</p> <p>12 A Yes.</p> <p>13 Q As a design engineer -- all three of those utilization</p> <p>14 ratios should be below 1, correct?</p> <p>15 A Yes.</p> <p>16 Q What did you do when you saw that at the 28-foot</p> <p>17 diameter and the 15-foot diameter we are above 1?</p> <p>18 A I'm not sure what exactly you're asking.</p> <p>19 Q Well, I'm assuming that when you did the design, you</p> <p>20 referenced and referred to this page --</p> <p>21 A Yes.</p> <p>22 Q -- 1376?</p> <p>23 A Yes.</p> <p>24 Q And as I understand it, if you see utilization ratios</p> <p>25 that are over 1, that's a signal that there's a</p>	<p style="text-align: right;">Page 24</p> <p>1 Mexico and that failed --</p> <p>2 A Yes.</p> <p>3 Q -- it went out per the design in Exhibit 5?</p> <p>4 A Yes.</p> <p>5 Q And it would have had utilization ratios at the 28-foot</p> <p>6 and the 15-foot diameter that are problems?</p> <p>7 A Yes.</p> <p>8 Q And you'll agree with me that the hopper bin should not</p> <p>9 have gone down to Mexico with utilization ratios at</p> <p>10 those seams of 3.89 and 1.52?</p> <p>11 A Yes. There was a math error. Yes.</p> <p>12 Q And maybe I'm just trying to be too diplomatic, and</p> <p>13 maybe that's part of our disconnect here. But, I mean,</p> <p>14 a mistake was made by Sioux Steel in the design of this</p> <p>15 bin, correct?</p> <p>16 A Yes. I made a mistake, yes.</p> <p>17 Q And that mistake is yours?</p> <p>18 A Yes.</p> <p>19 Q Post failure you said you made some changes. What</p> <p>20 changes were made to account for these design errors?</p> <p>21 A We modified the hopper panels, changed the bolt</p> <p>22 spacing, the edge distances from the edge of the</p> <p>23 material to the edge of the bolts, increased that.</p> <p>24 Q Is it still just one row of bolts, or are there more</p> <p>25 rows now?</p>

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<p style="text-align: right;">Page 57</p> <p>1 That doesn't account for a free-falling mass that has</p> <p>2 bridged, does it?</p> <p>3 A It does account for that because, you know, bridging,</p> <p>4 arching, and ratholing are dynamic pressures that the</p> <p>5 overpressure factor accounts for.</p> <p>6 Q So you believe the 1.4 is going to account for a</p> <p>7 freefall of a bridged mass?</p> <p>8 A You keep using your hand and using "a bridged mass." I</p> <p>9 mean, I guess I'm unclear as to what you're asking or</p> <p>10 what you're trying to get at. It's unclear to me.</p> <p>11 Q I'm trying to get at exactly what happened in Mexico in</p> <p>12 February of 2015. Let's just jump right there.</p> <p>13 What's your understanding of how that catastrophe</p> <p>14 happened?</p> <p>15 A My understanding is that to some extent there was</p> <p>16 bridging in the hopper and that's what caused it to</p> <p>17 fail.</p> <p>18 Q There was bridging in the hopper of soy meal, correct?</p> <p>19 A Yes.</p> <p>20 Q And some amount of it broke free or free fell, correct?</p> <p>21 A We have no way of knowing for sure, but that's what has</p> <p>22 been discussed, yes.</p> <p>23 Q And then it hit the bottom of the cone, correct?</p> <p>24 A Yes.</p> <p>25 Q And then once it hit the bottom of that cone, it</p>	<p style="text-align: right;">Page 59</p> <p>1 believe the failure started at the top of the cone?</p> <p>2 A I'm saying that the stresses in the panels were highest</p> <p>3 at the top of the panels.</p> <p>4 Q And I agree with you. We looked at your math from your</p> <p>5 design and that bears that out, correct?</p> <p>6 A Right.</p> <p>7 Q And that's from <u>Exhibit 5</u>.</p> <p>8 Have you seen the video?</p> <p>9 A I have not.</p> <p>10 Q Have you seen the pictures that show those panels after</p> <p>11 the event?</p> <p>12 A Yes.</p> <p>13 Q And does it not appear that most of the panels are</p> <p>14 still connected towards the top of the cone, whereas</p> <p>15 almost all of them have failed at the bottom?</p> <p>16 A They're connected on the horizontal seams at the top,</p> <p>17 yes.</p> <p>18 Q You don't believe that there are any of the vertical</p> <p>19 seams left connected towards the top of the cone?</p> <p>20 A I don't recall for sure.</p> <p>21 Q But anyway -- we'll get back to some of that later, but</p> <p>22 that's the event I keep referring to. I think Mr. Nohr</p> <p>23 is quite clear that soy meal that had bridged broke</p> <p>24 free and free fell and hit that cone and that is what</p> <p>25 then caused the event.</p>
<p style="text-align: right;">Page 58</p> <p>1 essentially exploded out the bottom and those vertical</p> <p>2 seams almost unzipped from a bottom-up motion, correct?</p> <p>3 A Not necessarily.</p> <p>4 Q Have you reviewed the report of Rod Nohr?</p> <p>5 A I have looked at the report, yes.</p> <p>6 Q And you understand that he was the expert hired by</p> <p>7 Sioux Steel to go investigate this failure?</p> <p>8 A Yes.</p> <p>9 Q Do you disagree with anything Mr. Nohr says?</p> <p>10 A Yes.</p> <p>11 Q You do?</p> <p>12 A Yes.</p> <p>13 Q What do you disagree with Mr. Nohr about?</p> <p>14 A He didn't do any math calculations on the design of the</p> <p>15 hopper. He did a report based on visual observation on</p> <p>16 the video that he saw. And when you look at the math,</p> <p>17 the stress is highest at the top of those vertical</p> <p>18 joints. So that's where failure should have occurred</p> <p>19 based on what you see, you know, based on utilization</p> <p>20 ratios.</p> <p>21 Q But Rod Nohr believes that the failure began at the</p> <p>22 very bottom of the cone, right? That's what Mr. Nohr</p> <p>23 believes?</p> <p>24 A That's what was in his report, yes.</p> <p>25 Q Are you telling me you disagree with that and you</p>	<p style="text-align: right;">Page 60</p> <p>1 Do you disagree with a bridge and then the free</p> <p>2 fall of the soy meal?</p> <p>3 A No.</p> <p>4 Q And that's what I keep referring to; that from a design</p> <p>5 perspective there's nothing -- you can't necessarily</p> <p>6 design -- or there's no 1.4 number out there that's</p> <p>7 going to account for the free fall of a bridged</p> <p>8 material, is there?</p> <p>9 A There are obviously varying degrees of bridging because</p> <p>10 again, you know, they discuss those dynamic load cases</p> <p>11 is why you apply the overpressure factor. So you are</p> <p>12 accounting for bridging, arching, and ratholing. You</p> <p>13 are accounting for that with an overpressure factor.</p> <p>14 Q Is what you're telling me that had those vertical seams</p> <p>15 on that cone down in Mexico -- if those vertical seams</p> <p>16 would be as they are now -- you told me that post</p> <p>17 failure there were some changes being made, correct?</p> <p>18 A Correct.</p> <p>19 Q So you're telling me that on the hopper cones out there</p> <p>20 now post failure, you're not concerned about free fall</p> <p>21 of a bridged material hitting the bottom, or are you</p> <p>22 telling me that those new seams would somehow have</p> <p>23 prevented the tragedy that occurred down in Mexico?</p> <p>24 MR. GOODSSELL: I'm going to object to form and</p> <p>25 foundation.</p>